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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,364	06/02/2005	Congji Zha	304122001100	2661

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755 PAGE MILL RD
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EXAMINER

MATOCHIK, THOMAS L

ART UNIT	PAPER NUMBER
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1709

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/537,364

Applicant(s)

ZHA ET AL.

Examiner

Thomas Matochik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 56-107 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 56-107 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :3/14/2003, 2/28/2004 and 6/28/2002.

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DETAILED ACTION

Claim Objections

Claims 100 – 102 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claimed ranges of 101 and 102 are broader than range claimed in claim 100.

Regarding claims 101 - 102: The ranges of water content in claims 101 and 102 include values below the lowest value in claim 100 (0.4%).

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 56 – 69, 72 – 75, 78, 86 – 88, 90 and 92 - 107 are rejected under 35 U.S.C. (102b) as being anticipated by Rees et.al (US 5,109,094).

Regarding claim 56 and 57: Rees teaches an organosilicon condensation product comprising a silicon compound having at least one silicon bonded hydroxyl group, and another silicon compound having at least one alkoxy group (-OR) bonded to silicon. The alkoxy R group contains 1 to 2 carbon atoms (col. 2, lines 56-65 and col. 4, lines 27-42). The molar ratio of silanol compound to alkoxy compound is 0.95 (col. 5, example 3). Further, any of calcium, magnesium, strontium, or barium hydroxides are used to catalyze the condensation reaction (col.3, lines 23 and 24). During the reaction, water is formed and is present in the reaction mixture (col. 3, lines 42 and 43).

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Regarding claim 58 and 59: Rees teaches a polysiloxane condensate (col. 5, example 3).

Regarding claims 60 - 65: Rees teaches a silicon reactant having 2 or more silanols (col. 2, lines 46-51).

Regarding claims 66 - 69: Rees teaches a silanol containing phenyl and vinyl groups (col. 3, line 1-5).

Regarding claims 72 - 75: Rees teaches a silicon compound having an alkoxy silane containing two methoxy groups (col. 4, line 35).

Regarding claim 78: Rees teaches an alkoxy group (-OR) where R is methoxy (col. 4, line 35).

Regarding claims 86, 87, 88 and 90: Rees teaches the use of both calcium and magnesium hydroxide catalysts (cols. 4&5, example 1).

Regarding claim 94: Rees teaches the presence of water in the reaction mixture (col 3, lines 42 and 43).

Regarding claim 95: A filtration step was used to remove the catalyst (col 3, lines 65-67).

Regarding claims 96 and 97: Rees teaches the amount of catalyst used is between about 0.001% to about 5% by weight of the organosilicon compound (col. 3, lines 65-68).

Regarding claims 103 - 105: Rees teaches a reaction temperature range between about 30°C to about 200°C (col. 3, lines 36-38).

Regarding claims 106 - 107: The Office realizes that all of the claimed effects or

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physical properties are not positively stated by the reference(s). However, the reference(s) teaches all of the claimed ingredients. Therefore, the claimed effects and physical properties, i.e. absorption values of 7 cm^{-1} and 15 cm^{-1} at about 2820 nm would inherently be achieved by a composition with all the claimed ingredients. If it is the applicant's position that this would not be the case: (1) evidence would need to be provided to support the applicant's position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients.

Claims 92, 93, 98 - 102 are rejected under 35 U.S.C. (102b) as being anticipated by Rees (US patent 5,109,094) when taken with The Encyclopedia of Polymer Science and Technology, Vol. 11, Silicones.

Rees teaches the claimed process as set forth above, regarding claim 56.

Regarding claims 92, 93, 98 -102: The Encyclopedia of Polymer Science and Technology, Vol. 11, Silicones, provides evidence that during condensation reactions of organosilanols and alkoxysilanes, one mole of water and one mole of alcohol are generated per mole of silicon containing compounds (page 782, reaction sequence 23 and 24). In the broadest reasonable interpretation of the condensation reaction, the water content will pass through the concentration ranges stated in the claims during normal operation of the process from startup to steady-state.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 76, 77, 79 - 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rees (US 5,109,094) as applied to claims 56, 72 and 73 above, and further in view of Hayes (US 4,395,563).

Rees teaches all the basic claims as above.

Regarding claims 76 and 77: Rees does not teach the use of 3 and 4 alkoxy groups on the silane molecule cited in the instant. However, Hayes teaches the use of tri and tetra alkoxy silanes leading to the formation of polysiloxane polymers. Rees and Hayes are analogous art since they both are from the same field of endeavor, namely silicon polymer condensation chemistry. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use tri and tetra alkoxy silanes to produce a wider range of branched and crosslinked polysiloxanes from Rees (Hayes, col. 5, lines 17-21).

Rees teaches all the basic claims as above.

Regarding claim 79 - 82: Rees does not teach the use of a crosslinkable group on the silane molecule cited in the instant. However, Hayes teaches the use of alkenyl substituted dialkoxy silanes leading to the formation of polysiloxane polymers. Rees and Hayes are analogous art since they both are from the same field of endeavor, namely

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silicon polymer condensation chemistry. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use crosslinkable alkoxysilanes to produce polymers which could be extended using hydrosilation chemistry (Hayes, col. 5, lines 53-68 and col. 6, lines 1-16).

Claims 89 and 91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rees (US 5,109,094) as applied to claims 56, 86 and 87 above, and further in view of Hayes (US 4,395,563).

Rees teaches all the basic claims as above.

Regarding claims 89 and 91: Rees does not teach the calcium and magnesium oxide catalysts cited in the instant. However, Hayes teaches the use of magnesium and calcium oxides as condensation catalysts leading to the formation of polysiloxane polymers. Rees and Hayes are analogous art since they both are from the same field of endeavor, namely silicon polymer condensation chemistry. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use calcium and magnesium oxide catalysts to better control the chain length of the polysiloxanes from Rees (Hayes, col. 3, lines 19-21 and 60-67).

Claims 70 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rees (US 5,109,094) as applied to claim 56, 60, 67, 68 and 69 above, and further in view of Friedrich et.al (US 2003/0216537).

Rees teaches all the basic claims as above.

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Regarding claims 70 and 71: Rees does not teach a crosslinkable group attached to the silanol compound as being an acrylate, styrene or epoxide. However, Friedrich teaches styrenic, acrylate and epoxy groups attached to silanol compounds used in the preparation of silicon polycondensates. Rees and Friedrich are analogous art since they both are from the same field of endeavor, namely silicon polymer condensation chemistry. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use specific crosslinking R groups on the alkoxy (-OR) monomer to provide greater chemical stability and to modify the physical properties, such as viscosity, of the condensed polymer (Friedrich, ¶ 0040 and 0041).

Claims 83 - 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rees (US 5,109,094) as applied to claim 56, 72, 73, 79 and 81 above, and further in view of Roscher et.al (WO01/04186). US Patent 6,984,483 was used for the English translation of WO01/04186.

Rees teaches all the basic claims as above.

Regarding claims 83 - 85: Rees does not teach an alkoxysilane compound containing a 3-methacryloxypropyltrimethoxysilane or an epoxy group. However, Roscher et.al teaches 3-methacryloxypropyltrimethoxysilane and epoxy containing alkoxides in the preparation of silicon polycondensates. Rees and Roscher et.al are analogous art since they both are from the same field of endeavor, namely silicon polymer condensation chemistry. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use 3-methacryloxypropyltrimethoxy and epoxy silanes in

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polycondensates as a means to create other polymers whereby polymerization of the double bonds results in lower shrinkage and less crack formation in the resulting polymer (Roscher, page 20, line 23, Example 1 and page 23, line 23 Example 8).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas Matochik whose telephone number is 571-270-3291. The examiner can normally be reached on Monday-Friday 7:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TLM


MARK EASHOO, PH.D.
SUPERVISORY PATENT EXAMINER

23/Jul/05